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ABSTRACT

A study focused on gender issues in Luribay, an isolated Andean region that shelters small, resource-limited farmers in the province of La Paz, Bolivia. Gender analysis was used as a tool for the planning and implementation of development programs. The research was carried out during June, July, and August 1993. A literature review focused on findings regarding gender issues in developing countries in general and in Bolivia in particular. Twenty-four households were randomly selected from four villages, and interviews were conducted with household heads. Differences among men, women, and children with respect to their role in production, reproduction, and intrahousehold dynamics were identified. Women had less formal education and far less access to agricultural extension than men. Men and women had hign levels of complementarity in carrying out agricultural tasks. However, with respect to household-related activities, women carried a considerably larger burden. Inequalities between genders were visible in the decision-making sphere. However, males and females tended to share authority. Also, in almost all households, women had little or no access to two key resources--land and information. A suggestion was that development projects in Luribay Valley would substantially increase their impact if they took the women's situation into consideration. Gender analysis could help implement a more participatory development approach. (Contains 32 references. The survey instrument is appended.) (YLB)

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ED 372 233

GENDER ANALYSIS IN AGRICULTURE IN LURIBAY VALLEY, BOLIVIA

By

JOSÉ LUIS GARCÍA-PABÓN

NON-THESIS RESEARCH PRESENTED TO THE DEPARTMENT OF
AGRICULTURAL EDUCATION AND COMMUNICATION
OF THE UNIVERSITY OF FLORIDA

UNIVERSITY OF FLORIDA

1994

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TABLE OF CONTENTS

LIST OF TABLES iii

LIST OF FIGURES iv

ABSTRACT v

CHAPTER 1 INTRODUCTION 1
Bolivia, The Luribay Valley and Development . . . 1
The Problem Statement 2
Hypothesis 4
Purpose and Objectives 4
Need for the Study 4
The Physical Environment 5
Geographical Situation and Geological Characteristics 5
Soils 6
Climate 7

CHAPTER 2 LITERATURE REVIEW 10
The Distribution of Tasks by Gender in Agricultural Production and in the Household 12
The Allocation of Resources and the Process of Decision-Making within the Household 17

CHAPTER 3 RESEARCH PROCEDURE. 21
The Sample Population. 21
Technique and Instruments. 22
The Analysis Procedure 25
Weaknesses and Constraints 26

CHAPTER 4 PRESENTATION AND INTERPRETATION OF RESULTS. . . 28
Statistical Demographics on Luribay Households . . . 28
The Analysis on Gender in the Study Villages in Luribay 36

CHAPTER 5 DISCUSSION AND CONCLUSIONS. 55

APPENDIX 61

REFERENCE LIST. 67

LIST OF TABLES

Table		page
1.	Number of Members in 24 Households of Four Villages in Luribay Valley, Bolivia . . .	29
2.	Age of Male Adults in 24 Households of Four Villages in Luribay Valley, Bolivia .	30
3.	Age of Female Adults in 24 Households of Four Villages in Luribay Valley, Bolivia. . .	30
4.	Number of Boys over Fifteen Years Old per Household in Four Villages in Luribay Valley, Bolivia.	31
5.	Number of Girls over Fifteen Years Old per Household in Four Villages in Luribay Valley, Bolivia.	31
6.	Number of Boys between Eight and Fifteen Years Old per Household in Four Villages in Luribay Valley, Bolivia	31
7.	Number of Girls between Eight and Fifteen Years Old per Household in Four Villages in Luribay Valley, Bolivia	32
8.	Education Level of Male Adults in Four Villages in Luribay Valley, Bolivia.	32
9.	Education Level of Female Adults in Four Villages in Luribay Valley, Bolivia.	33
10.	Access to Extension of Male and Female in Four Villages in Luribay Valley, Bolivia	33
11.	Cross Tabulation Between Education of Male Adults and Who Has Access to Extension/ Information in Four Villages in Luribay Valley, Bolivia.	34
12.	Cross Tabulation Between Education of Female Adults and Who Has Access to Extension/	

Information in Four Villages in Luribay Valley, Bolivia. 34

13. Land Owned by Families in Four Villages in Luribay Valley, Bolivia 35

14. Number of Plots Among Households in Four Villages in Luribay Valley, Bolivia 36

15. Activities Analysis of Agricultural Production in Four Villages in Luribay Valley, Bolivia. 39

16. Labor Use by Age-Sex Categories for Agricultural Tasks in Four Villages in Luribay Valley, Bolivia. 46

17. Responsibility by Age-Sex Categories for Non-Agricultural Activities in Percentage of Households in Four Villages in Luribay Valley, Bolivia. 46

18. Percentage of Households with Three Levels of Decision-Making Force in Relation to Agriculture and Household for Males and Females in Four villages in Luribay Valley, Bolivia. 53

19. Percentage of Households with Three Levels of Access to Resources for Males and Females in Four Villages in Luribay Valley, Bolivia. . . 53

LIST OF FIGURES

Figure		page
1.	Landscape View of Luribay Valley with its Topographical Characteristics	9
2.	A View of Collpani and Callaviri Villages and Pea Plots in the River bed	23
3.	Gender-Disaggregated Activities Calendar for Four Villages in Luribay Valley, Bolivia.	41
4.	Total Number of Days for Activities Performed by Male and Female Adults for Agricultural Production in Four Villages in Luribay Valley, Bolivia	47

Abstract of Research Project Presented to the Department of Agricultural Education and Communication of the University of Florida

GENDER ANALYSIS IN AGRICULTURE IN LURIBAY VALLEY, BOLIVIA

By

José Luis García-Pabón

August 1994

Chairperson: Dr. Clifton L. Taylor
Major Department: Agricultural Education and Communication

The Luribay Valley is an isolated Andean region that shelters small, resource-limited farmers in the province of La Paz, Bolivia. This study focuses on gender issues in Luribay and presents gender analysis as a tool for the planning and implementation of development programs.

The central purpose of this work is to document the fact that men, women, and children in Luribay Valley play different roles in their livelihood systems. Further, this study accepts the hypotheses that 1) household members use their time for different tasks in agricultural production and in the domestic area, 2) men and women have different decision-making authority, and 3) men and women have different access to resources for production and consumption.

The research was carried out during the months of June, July, and August 1993. Twenty-four households were randomly selected from four villages, and interviews were conducted

with household heads.

A brief description of Luribay Valley, a specific literature review, and the research procedure are presented. In addition, the main section of this study addresses the results and interpretation of demographics and gender analysis. Differences between men, women, and children with respect to their role in production, reproduction, and intra-household dynamics are identified. Women in the study villages have less formal education and far less access to agricultural extension than men. Men and women have high levels of complementarity in carrying out agricultural tasks. However, with respect to household-related activities, women carry a considerably larger burden than men.

Inequalities between genders are visible in the decision-making sphere. However, male and female tend to share authority. Also, in almost all observed households, women have little or no access to two key resources, land and information.

It is suggested that institutions in Luribay Valley need to become more aware of women's roles in order to increase institutions' chances of success in development efforts. Finally, some specific steps are suggested with the aim of bridging the identified inequalities. This study may be the first step in this direction, but it is not the ultimate and definitive one. Rather, it should serve as a basis for further research on gender issues in Bolivia.

CHAPTER 1
INTRODUCTION

Bolivia, the Luribay Valley, and Development

Bolivia is one of the poorest countries in Latin America. Its integrated poverty index was ranked the 13th poorest in the world in 1988 (Jazairy et al., 1992). Poverty conditions are particularly evident in rural areas throughout the country. In 1988, 97% of the Bolivian rural population --or 3.36 million people-- lived below the poverty line (Jazairy et al., 1992). Poverty may impact members of rural households differently. Women, men, and children in rural households, as well as female-headed households, may be differently affected by poverty and the government's structural adjustment programs. According to Jazairy's (1992) data, 1.81 million Bolivian rural women lived in poverty in the mid-1980s, and 121,000 poor rural families were headed by women.

Since the mid-1980s, new development approaches for rural regions of Bolivia have been implemented. Official programs, supported by international aid organizations and non-governmental organizations (NGOs), addressed small farmers to help them overcome the poverty which was exacerbated by the government's structural adjustment programs.

Small farmers in Luribay Valley have also seen a decrease in their already poor living standards. In 1985, the

government included Luribay Valley in a major development effort for two extensive areas in the provinces of La Paz and Oruro. At about the same time, two NGOs started two different and independent projects in Luribay. Previous to these projects, no agricultural assistance was available to farmers in the region. The official extension service had stopped its activities in Luribay in the mid-1970s due to a lack of resources and financial shortage.

The Problem Statement

All current development projects in Luribay Valley have focused on increasing agricultural production. For example, crop programs have included the use of new seed varieties, new planting and cultivating techniques, and the application of chemical fertilizers and pesticides. The development institutions in the valley have also seen the need for designing and constructing small irrigation projects, such as canals and tanks. Irrigation is crucial for agricultural production, and therefore the response of farmers to these programs has always been immediate. Other important programs were the training of farmers on agricultural technologies and credit programs for the purchase of seed, fertilizers, and pesticides. Development projects have also implemented activities involving women. These activities have almost been exclusively related to domestic tasks such as food preparation and sewing.

Development projects and extension programs in Luribay Valley have been working with apparently more success in certain activities than in others. Most infrastructure-related activities, such as the construction of irrigation tanks and canals, have succeeded. Other programs, such as technology innovations for the increase of agricultural production, training programs for farmers, and credit plans, seemed to have been partially successful. Some evidence includes low levels of adoption of new technologies, low numbers attending training activities, and a low rate of credit reimbursements. The activities involving women appeared to have the least success. None of the current development projects seemed to be able to maintain their activities involving women.

A possible reason for the projects' limited success is that several projects' officials have seen agriculture as an unconnected activity to domestic work and community tasks. Also, project planners and extension personnel apparently have considered the household head as the only one directly involved in agricultural production. Focusing on individual producers, on a partial set of activities (such as agriculture), or even on only one element of this set (such as one crop) may have hindered project planners and implementers from seeing the complexity of the whole farming system in Luribay. Moreover, the lack of information about family composition, the roles of household members, and the inter-

and intra-household dynamics may be an important reason for unsuccessful development attempts.

Hypothesis

Male and female household members in the livelihood systems in Luribay Valley (a) carry out different tasks, (b) have unequal responsibilities, (c) enjoy unequal access to resources, and (d) possess different decision-making authority.

Purpose and Objectives

The main purpose of this study is to identify and document the gender-based household dynamics in four villages in Luribay Valley. The four objectives that support the accomplishment of the main purpose are:

- to identify the productive roles in agriculture of household members in four villages in Luribay Valley,
- to identify the reproductive roles, i.e. the domestic activities, of household members,
- to document the process of decision-making within the the households, and
- to determine the relative access to resources of male and female household members

Need for the Study

Agricultural research and extension in Luribay seem to be

important factors for the development of the region. Therefore, improving the effectiveness of both research and extension is a necessary step to achieving development. One of the most basic steps to improve effectiveness is to understand gender issues in the valley and apply that understanding to the planning and implementing of projects.

This study attempts to meet the need for information on the roles and responsibilities of household members, the allocation of resources, and the decision-making process within households in Luribay. This research, conducted during June, July, and August 1993, will help development organizations to identify and target specific audiences, such as female farmers and female-headed households, in Luribay Valley.

The Physical Environment

Geographical Situation and Geological Characteristics

The Luribay Valley is located in the Province of Luribay, 220 km from La Paz. Luribay is a narrow valley that is part of the great chain of mountains "Tres Cruces" (Three Crosses) in the Andes. The valley is situated between 16°30′ and 17°20′ southern latitude and between 67°20′ and 68°10′ western longitude. About 90% of the area is uneven, formed by a high range of mountains with steep hillsides. The valley runs from southeast to northwest with a decreasing altitude from 2,800 m to 2,200 m above sea level. The mean altitude is 2,500 m

above sea level, and the elevation of the mountain-range fluctuates between 3,000 and 3,800 m above the sea level (CORDEPAZ, 1993).

Flat areas are located on both sides of the Luribay River. These flat areas are mostly used for agricultural production. The widest plots may reach 500 meters across. The river bed also reaches a maximum width of 500 meters. The slope of the flatter areas varies between 2% and 30%, whereas the slope of farming plots on the hillsides varies between 40% and 70%.

Three different formations characterize the geology of the valley. First, alluvial terraces are formed by the mountain-range's erosion and the sedimentation of silt caused by mud slides. Second, alluvial fans are topographical surfaces built up by alluvial sedimentation at the edge of the mountains and heavily affected by mud slides. Third, mountain-ranges are the dominant landscape with scarce soil building and severe erosion.

Soils

Soils of alluvial terraces, which are most intensely used for agricultural production, are shallow. The color of these soils is gray to dark gray and brown to reddish-brown. The texture ranges from loam to clay or sandy-clay with the presence of stones and gravel at certain depths. The soil pH is neutral to lightly alkaline.

Soils of alluvial fans are also shallow, but unlike the terraces, they have stones and gravel close to the surface. The color is dark brown-gray and its texture ranges between loam and sandy-clay-loam soils. These soils are neutral to lightly alkaline (CORDEPAZ, 1993).

Another analysis of soils in Luribay, conducted in 1978, revealed that the pH of most soil samples ranges from alkaline to moderately alkaline, due to the presence of carbonates and sodium ions. Also, the content of organic matter was found poor --lower than 1% in most of the samples. Moreover, the available phosphorus was found to be extremely low. Generally, soil fertility in Luribay is poor and crops need additional nutrients (CORDEPAZ, 1978).

Climate

The Luribay Valley is a mesothermal region; that is, a zone with temperature characteristics between the cold highland and the warm lowland. The average temperature in spring and summer (September to March) is 19°C, with maximum temperatures of 30°C and minimum temperatures of 8°C. In fall and winter the mean temperature is 17°C, with a maximum of 29°C and a minimum of 5°C.

The three-year average precipitation from 1974 to 1976 was 376.2 mm. However, according to local residents, a decreasing tendency in precipitation has been observed in recent years. Most of the rainfall occurs in the summer and

the beginning of the fall, while spring and winter are dry periods. Some of the precipitation falls in the form of hail, particularly at the beginning of the rainy season. Freezing occurs at higher sites of the hillsides (CORDEPAZ, 1993).

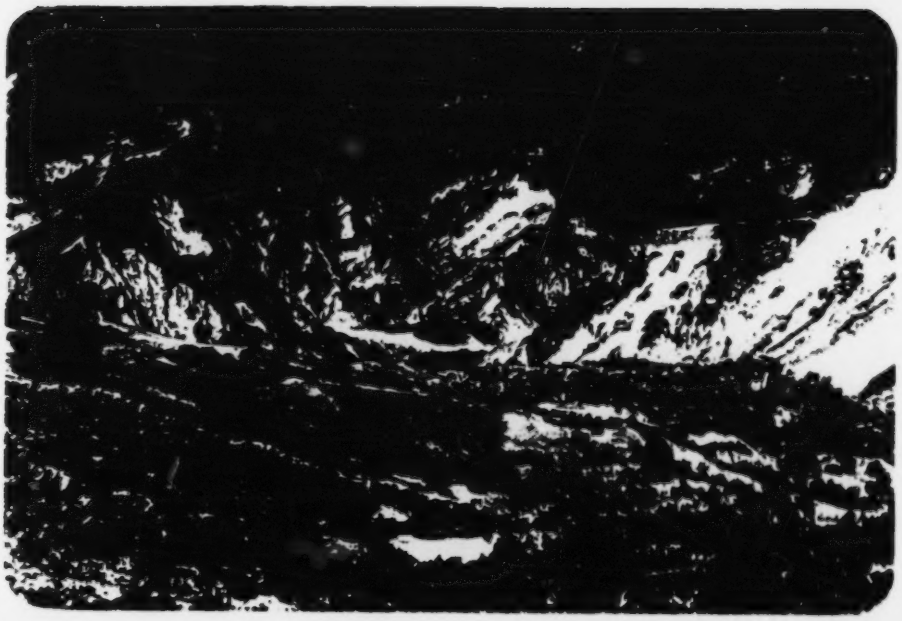

Figure 1: Landscape View of Luribay Valley with its Topographical Characteristics

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CHAPTER 2
LITERATURE REVIEW

This literature review will present points of view and findings of authors on gender issues in developing countries in general and in Bolivia in particular.

For decades researchers, national and international development organizations and extension agencies have figured the rural household as a "black box", a monolithic institution. They believed (and many still do) that household members have the same needs, interests and concerns; the same access to, and control over, resources; and the same decision-making authority (Chiappori 1992; Thomas 1992; Safilios-Rothschield, 1980; Poats et al.,1988).

McCorduck, reviewing Jodi L. Jacobson's book, Gender Bias: Roadblock to Sustainable Development, states:

> Since the 1950s, international development policy has been based on several fallacious assumptions: First, that current development strategies benefit men and women equally. Second, that the traditional "Western" model of a "household" where a father, mother and children share common interest and work toward common goals, is applicable to all societies. Third, that within households, the burdens and benefits of poverty and wealth will be distributed equally regardless of gender (McCorduck, 1993).

Western "assumptions" are also mentioned by Moser (1993), who refers to them as part of the "Western planning theory". Moser points out that there is an almost universal tendency to make the assumptions that the household, (a) consists of a

nuclear family, (b) functions as a socio-economic unit with equal resource allocation and decision-making power between adult household members, and (c) has a clear division of labor based on gender, where the man is the "breadwinner' and the woman is the "homemaker".

McCorkle (1991) claims that the interpretation and analysis of households by researchers and developers usually has a reductionist and often biased view. She offers the term "reductionist" to convey that people limit their research and analysis to few factors in order to facilitate investigation and arrive at fast and acceptable results. Biased results occur because researchers and developers often interpret household dynamics in developing countries from a western and an own-family experience point of view. McCorkle also states that the patriarchal prejudice of Western societies explains the undervaluation of any task other than adult male agricultural work.

Two main topics that appear in the literature on gender and development are highly relevant to the present study. They include: (a) the distribution of tasks by gender in agricultural production and in the household, and (b) the allocation of resources and the process of decision-making within the household. Both topics are discussed below, first generally and then more specifically about observed Latin American and Andean patterns.

The Distribution of Tasks by Gender in Agricultural Production and in the Household

The division of labor by gender, age and status has been occurring for centuries in all societies. Yet these issues have only been seriously studied for the last two decades.

Feldstein et al. describe some of the most common labor distribution patterns in rural households of Third World countries:

> Men prepare land, women weed; women raise swine, men raise cattle; women grow cassava, men grow maize; senior wives work on their own fields, junior wives on those of their husbands and the head of the household (Feldstein et al., 1989).

The dynamics of the farm household in Third World countries are intense and complex. The tasks of each member are determined by a number of individual factors such as age, sex, health, skills, appearance and place in the family structure; by family factors such as family composition; and also by socio-cultural factors such as social hierarchy, economic class, ethnicity, laws, religion, etc. (Johnson, 1985).

Norem et al. (1989) claim that besides the different roles of men and women in production, the different resource base for each gender, the constraints that each one faces, and each one's major or minor needs for the effective functioning of the production system, knowledge is also different between male and female household members.

> ...some types of knowledge are traditionally the domain of women. Some types of knowledge may be complementary, meaning that both female and male knowledge systems are needed to

> understand a particular dimension of agricultural production, household decision making or other domains . . .: women and men may have different ways of organizing knowledge or different ways of preserving and transferring technology (Norem et al., 1989).

Household production and human capital production, i.e., reproductive tasks, seem to be the most widely recognized female tasks by cultures and societies. However, women play important roles both in domestic and agricultural production. They are mothers, food processors, child bearers, water and wood carriers, agricultural laborers (for their own family and for others), marketers and even entrepreneurs (Axinn, 1981).

Cloud identifies five categories of women's activities in agricultural production systems:

> - agricultural production: the output of crops and livestock for home consumption or market sale
> - household production: goods and services produced within the household for home consumption or market sale
> - human capital production: childbearing, child care and the transmission of skills and knowledge
> - self-employment in the informal market sector: off-farm activities such as marketing and personal services
> - wage labor: paid employment, whether in agriculture or other sectors (Cloud, 1985).

Further, Cloud distinguishes participation patterns in agricultural production, such as <u>separate crops</u> where women and men have the responsibility of different crops. This production practice is often found in African countries. <u>Separate fields</u> refers to the pattern where women and men produce the same crop but in different fields. When specific tasks are assigned to men or women in the same field and with the same crop, Cloud uses the term <u>separate tasks</u>, which may include activities for men such as land preparation, plowing

or chemical plant protection, and activities for women such as seed selection and planting, transplanting, post-harvest processing, storage and marketing. Further, the shared tasks reflect the participation of more than one member of the family in the assigned task. However, within the shared tasks, men and women may have specific activities. For instance, in the planting assignment, men may open the furrow and women may put the seed in it, which is common in Latin America. Cloud also mentions the pattern women-managed farms, which can be carried out either temporarily when the man migrates for a period of time, or permanently when the woman is widowed, divorced, abandoned or not married.

Fernandez observes the various roles of women in agriculture:

> In Andean mixed farming systems, women are the principal herders. The division of labor among family members by gender does not necessarily imply specific biological reasons for one or the other to assume certain production activities. The distribution of responsibility and tasks is basically a functional one. Women within a given farming system are often assigned tasks and responsibilities that are compatible with the care of small children. Within the farming system, task allocation and responsibility for production decisions are overlaid and interacting. While men are responsible for agriculture, women do the seed selection and planting. While women are responsible for livestock production, men do the branding and care for the supplementary feeding of oxen (Fernandez, 1988).

Research has generated information on tendencies with respect to women's participation in Latin American agriculture.

> Throughout the world for long periods prior to colonization there were great differences in what men did and what women did in agriculture. Men's work in one society was women's work in another society and viceversa. But there tended to be a division of labor by sex in most societies, just as there was a division of labor by age. This division of labor in

> agriculture tended to be complementary. That is, what men did depended on what women did, and viceversa- and neither could produce without the other. . .. In Latin America men do most of the agriculture. Yet among the Aymara Indians of the Andes for example, women select the seed potatoes. Women's input thus is crucial for the production of potatoes. In much of Latin America, most agriculture is done by men but women have complementary roles (Butler Flora, 1982).

Deere and León conclude (1987) that first, Latin American women are agricultural producers; second, that rather than a male farming system, Latin American peasant agriculture is best characterized as a family farming system; and third, that "across Latin America, irrespective of their economic contribution, rural women carry the burden of reproductive tasks: housework, childcare, care of the elderly and sick, and, of course child bearing."

Deere and León distinguish egalitarian from patriarchal family farming systems in Latin America.

> In general, Latin American smallholder agriculture appears much more egalitarian than the family farming systems of the middle and rich peasantry. Nevertheless, a more flexible gender division of labor and of responsibility and authority -particularly in conditions of extreme rural poverty- does not necessarily imply an absolute improvement in women's lives or social position (Deere and León, 1987).

Bourque and Warren (1981) claim that domestic tasks are especially laborious and time intensive in rural societies of Latin America. Moreover, the reproductive workload of rural women is heavier than that of urban women due to the lack of social infrastructure, such as access to running water or electricity. Also, the perception of work by male and female farmers seems to be different in certain communities in the Andes. Men tend to identify women's tasks as primarily on reproduction, minimizing women's contributions to production.

On the other hand, women recognize their own full range of involvement in productive as well as reproductive activities.

Studer (1983), reviewing the work of Olivia Harris, An Andean View of Women and Men, states that the labor division in Andean communities of Bolivia is based on complementarity between men and women. Agriculture is practiced by both sexes, the plowing is carried out by men while women sow the seed. With respect to livestock, men take care of larger animals such as llamas while women and children care for goats and sheep. The concept of complementarity, through ancient traditions and beliefs, may be deeply rooted in rural families of the Bolivian highlands. The role of rural women in the productive and reproductive sphere in the Bolivian Andes is more complex than the sole task distribution by gender.

Work expected of the Bolivian woman are somehow higher than those of the man (Gumucio, 1977; Condori et al., 1988; Lora, 1991).

> Woman's work in Andean rural settings in Bolivia is as hard as, or harder than, man's work. She, together with him, carries out agricultural work. But she also weaves, spins, bears the bargaining and marketing of products, takes care of animals and helps in the house construction and repairs. All this is without counting her responsibilities in food preparation, taking care of children, and other ordinary domestic activities (translated from Gumucio, 1977).

Deere and León (1982), citing Mickelwait et al., point out that indigenous female peasants in Andean Bolivia participate equally in farming activities with men. Studer (1983) mentions that men are nearly the exclusive participants in community businesses in the Andes settings. However,

according to Sautu (1982), rural women in the Bolivian Andes are allowed to work cooperatively, lending their labor force to relatives and friends. An equal work retribution is "paid back" at some later date.

The Allocation of Resources and the Process of Decision-Making within the Household

Intra-household dynamics, defined as the dynamics in the allocation of resources and the process of decision-making, may undergo intense negotiation and bargaining. Some questions must be carefully considered to better understand the dynamics of farm households (Poats et al., 1988). For example, What is the access and use of resources by the household members? What is the degree of control over the resources by each family member? Who decides about production strategies or expenditures? Who bears the responsibility for the use of commodities produced? The goals and interests of household members may be competing or even totally opposite.

> In many societies women and men have quite separate responsibilities, access to disctinct resources and differentiated control over return from their own activities (Poats et al., 1988).

The assumption that the utility function of a household acting in its "own best interest" obscures the fact that the best interest of a household may not be the best interest of particular members (Cloud, 1985). Negotiations may be required among the parties.

Feldstein and Poats (1989) suggest that these patterns of resource allocation and decision-making vary from one society to another. In some cultures, mostly patriarchal, one household member is the single decision maker. In others, different members make different decisions in different fields. Consultation and negotiation take place between particular members. Other households may have totally separated spheres of decisions for each or some household members.

> Within a given system, individual household members may share some goals, benefits and resources, be independent on some and be in conflict on others. What we face is complexity, not homogeneity (Feldstein and Poats, 1989).

Resources may be accessible to part of the household members or to only one. The control over resources also may be different for men, women and children. Access refers to the ability to use a resource, while control refers to the power to decide about the use of specific resources (Poats et al., 1988). Access to, and control over, land is one such example. In some countries access to land is <u>de facto</u> reserved to men. Men have control over the land and decide whether or not to sell it, while women only have access to land for growing crops. In most rural societies women's access to, and control over, land is largely indirect.

> They (women) acquire land by means of their relationship to individual males such as husbands, fathers or brothers by virtue of their gender roles as wives or mothers. Men, in contrast, own land in their own right or by virtue of their lineage membership or other systems of inheritance (Moser, 1993).

Condori (1988), from her personal experience as a rural

woman in Bolivia, explains that in her Andean village, women do not have any right to land. When a woman (she refers to her aunt) moves to another community (due to her marriage for example), she loses all rights to her family's land. Even the right to express opinion about how to use it is denied her.

Little research attention has been given to intra-household dynamics. Gittelsohn (1992) identifies some reasons for this: "These behaviors frequently occur behind doors, that is, that they are not public, observable phenomena." Additionally, resource-allocation is made up of many "little" activities and behaviors that prove challenging for individuals to recall accurately. Finally, intra-household behaviors are of a sensitive nature and may be difficult topics for interviews.

Decision-making within the household may not be a smooth mechanism. It may be the result of one head with the authority to make decisions that affect the rest of the family. Decision-making also may also occur through interaction between household members, such as consultation, negotiation, suggestion, or disagreement (Gittelsohn, 1992). Furthermore, women's characteristics such as age, income or education, are not significant at the bottom line in decision-making within the household (Mengesha, 1991).

> Household decision-making regarding the allocation of resources and sharing of household chores and responsibilities, including childcare, are vital to a more balanced role. Factors reflecting their (women's) status include access to income and employment, access to financial services, land and other farm assets and markets and marketing services. Of equal importance is women's access to inputs,

> appropriate technology, and extension services (Jazairy, et al., 1992)

Ashby (1985) notes that in Latin America, gender has a great influence on the amount, quality and stability of food production as well as on general access to food. She also claims that the management of food consumption and the decision-making roles in agricultural production are heavily subordinated to the allocation of women's time.

Deere and León (1982) found that in an Andean community, women shared greater responsibility and decision-making authority in many agricultural activities when they belonged to small or near landless households. They also found that,

> Contracting or arranging for non-family labor to participate in an agricultural task tends to be a male responsibility among all the strata. ...(however) women play a much greater role in decisions concerning product disposition than they do in the other facets of agricultural decision-making. In the majority of households women take responsibility for storing and allocating the crop to consumption and animal feed. A similar trend characterizes the decision of what, when, and how much is to be sold of either crops or animals on the market (Deere and León, 1982).

This chapter has reviewed part of the extant literature concerning the roles of household members in societies of the world and Andean regions specifically. The complementarity of men and women's roles with respect to agricultural tasks in Andean societies has been noted. Also, the decision-making process within households and the degree of access to, and control over, resources of the household members have been discussed. Finally, the thoughts and ideas of several researchers concerned with the difficulty of understanding intra-household dynamics have been presented.

CHAPTER 3
RESEARCH PROCEDURE

The Sample Population

The Luribay Valley shelters about 40 farm villages. The study population for this research was small farm households. The sample population has been stratified based on the criterion of land ownership. Households involved in the research had to meet the requirement of owning 0.8 hectare of land or less. This area is twice the average size of farms in Luribay and includes the vast majority of farmers in the valley. Thus, farmers in Luribay are mainly small farmers. Larger landowners, who usually have other means of income, have not been included in this research, nor have landless people, whose number is very small in the valley. The agricultural production of the sample population involves table grapes, the most important cash crop, followed by peaches, apples, and pears. Food crops are potatoes, corn, and a variety of vegetables. Families have small animals such as sheep, pigs, poultry, and guinea pigs. Growing green peas in the river bed is a new and economically important practice which is threatened by the risk of flooding and changing of the river course.

Samples came from four villages of the Luribay Valley,

Collpani with about 50 families, Cachualla with about 100 families, Callaviri with about 56 families, and Catavi with about 28 families. Ten percent of the farm families in each village have been directly involved in the research. That is, five families in Collpani, six in Callaviri, ten in Cachualla, and three in Catavi have participated in the research procedure. In total, 24 families participated directly in the research.

Collpani and Cachualla are located on the road to the cities of La Paz and Oruro and at one side of the Luribay River. The remaining two villages, Callaviri and Catavi, are located at the other side of the river, but not on the road. Therefore, trucks must cross the river to be loaded with agricultural products. This may be an important difference during the rainy season, since the swollen river can make it very difficult for trucks to get to Callaviri and Catavi.

Techniques and Instruments

This research is based on a survey, complemented by observations and by my three-year work experience in Luribay Valley. The sample population consists of small farmers with no more than 0.8 hectare of land. Adults of the selected households were directly involved during the field work. Face-to-face interviews were the main technique used to gather data. The instrument used to gather the information was a questionnaire. This questionnaire was reviewed by professors

of the Food and Resource Economics Department and the Department of Agricultural Education and Communication of the University of Florida.

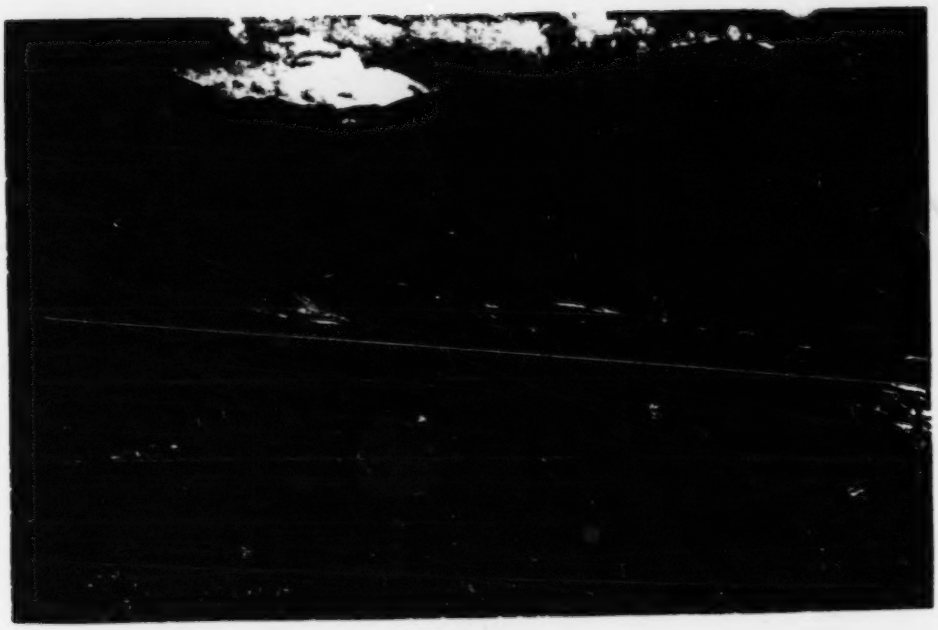

Figure 2: A View of Villages Collpani and Callaviri and Pea Plots in the Luribay River Bed

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Interviews took place in the house or in convenient places for the respondents in Luribay. The unit of analysis was the entire household, with the focus on adult males and adult females, since they seemed to be the most productive members, the major decision makers, and the major resource users within the households. Respondents were family heads, primarily men. Household heads in Luribay are expected to take the responsibility of dealing with external people, giving the interviewer little chance to talk with female household members.

The questionnaire had a structured format containing mostly close-end, and some open-end questions. The bases for the elaboration of the questionnaire have been: The Conceptual Framework for Gender Analysis in Farming Systems Research and Extension by Feldstein et al. (1989) and Women's Work in Third World Agriculture by Dixon-Mueller (1985). The questionnaire included questions related to demographics, land ownership, agricultural tasks of the household members, domestic activities of the household members, decision-making within the household, access to resources, and community duties (see appendix).

Qualitative research elements, such as interviewees' social perceptions and household interpretation, were important parts of the analysis. The analysis was supported by the information gathered in informal conversations with household members of different villages and by observations

during the researcher's work experience in Luribay Valley. Also, as an additional information source, two informal interviews with two extension workers were conducted in Luribay Valley.

The field work was carried out during the months of June, July, and August 1993. The selected villages are situated within five to ten kilometers of each other on both sides of the Luribay River. The interviews were conducted by the author and a female sociologist. Both walked from village to village in order to meet the informants and conduct the interviews.

The Analysis Procedure

The data collected in the interviews were programmed and entered into the Statistical Analysis System (SAS) software on a personal computer. For descriptive statistical analysis, the frequency procedure which includes the cumulative frequency, the percent and the cumulative percent, was used. For further analysis, comparisons and the generation of tables, the procedures means, charts and cross tabulations, given the nominal nature of the data (Schlotzhauer and Littell, 1987) were employed. No inferential statistical tests were performed due the small number of observations.

Weaknesses and Constraints

The Luribay Valley is a remote and economically insignificant region of Bolivia. Studies and scientifically based information on Luribay are practically nonexistent. Furthermore, neither logistical support nor institutional funds were available. Consequently, this research on gender issues for Luribay has not only been a challenge, but also an accomplishment.

This research partially meets the need for complete and comprehensive information on gender issues in Luribay Valley. This is the first step in sheding light on important topics for the development of Luribay, but it is by no means the ultimate one. More extensive research is needed on intra- and inter-household dynamics, the specific impact of current development projects on male- and female-headed households and on household members, the out-migration of men and its impact on women, as well as women and environment in Luribay.

One limitation of this study is that interviews were made mostly with adult males, since they were considered household heads and consequently were responsible for responding to the interview questions. This cultural bias gave the research an overwhelming proportion of male informants, who presented only their viewpoints and may have underrepresented or overlooked women's perspectives on agricultural production and household dynamics. Information on agricultural production seemed to be recalled faster and more accurately by male respondents than

was information on household activities and marketing. Men also appeared to feel somewhat comfortable responding either to, or in presence of, an already-known person and male interviewer.

Finally, inquiring about sensitive topics, such as decision-making and access to resources, is difficult and time consuming. Consequently, responses to these questions may be somewhat superficial and require more in-depth study.

CHAPTER 4
PRESENTATION AND INTERPRETATION OF RESULTS

The first part of this chapter presents a summary of general demographic information for the Luribay families. This contextual information is important for a better understanding of gender analysis in the four study villages. The second part will discuss outcomes of the SAS analysis that directly relate to the objectives of this study.

Statistical Demographics on Luribay Households

Twenty-four households were interviewed in four villages in Luribay Valley. In one interview, both the husband and wife were present and answered several questions after consulting each other. In matters such as household expenditures and domestic activities, the wife seemed to have more exact ideas. Another interview was done with a widower and a third interview was done with a widow. In sum, twenty-two respondents (or 92% of the sample population) were male, one respondent was female and one interview involved a husband and wife. Two families had only two members, the husband and the wife, and one household had nine members. Four to seven household members seemed to be the usual range for the valley, comprising nearly 80% of all households. The average number

of household members for the twenty-four families is 5.5 (Table 1).

Table 1: Number of Members in 24 Households of Four Villages in Luribay Valley, Bolivia

No.of Memb.	Frequency	Percent	Cumulative Frequency	Cumulative Percent
2	2	8.3	2	8.3
4	6	25.0	8	33.3
5	4	16.7	12	50.0
6	4	16.7	16	66.7
7	5	20.8	21	87.5
8	2	8.3	23	95.8
9	1	4.2	24	100.0

As shown in Table 2, the ages of male family heads range between 26 and 65 years old, with five male family heads 50 years or older and five male family heads 35 years old or younger; 13 male family heads are between the ages of 36 and 49 years. The average age is 41 years old. Table 3 indicates the ages of adult females in the observed households. The youngest adult female is 24 years old and the oldest is 60 years old. Fifty percent of the women are 36 or younger. Two households do not have an adult female. The average age for the adult females in the four villages is 37 years.

Table 2: Age of Male Adults in 24 Households of Four Villages in Luribay Valley, Bolivia.

Males	Frequency	Percent	Cumulative Frequency	Cumulative Percent
26	1	4.3	1	4.3
31	1	4.3	2	8.7
32	2	8.7	4	17.4
35	2	8.7	6	26.1
36	1	4.3	7	30.4
37	1	4.3	8	34.8
38	3	13.0	11	47.8
39	2	8.7	13	56.5
40	3	13.0	16	69.6
42	2	8.7	18	78.3
50	1	4.3	19	82.6
51	1	4.3	20	87.0
54	1	4.3	21	91.3
57	1	4.3	22	95.7
65	1	4.3	23	100.0

Frequency Missing = 1

Table 3: Age of Female Adults in 24 Households of Four Villages in Luribay Valley, Bolivia

Females	Frequency	Percent	Cumulative Frequency	Cumulative Percent
24	1	4.5	1	4.5
28	1	4.5	2	9.1
30	2	9.1	4	18.2
32	3	13.6	7	31.8
33	2	9.1	9	40.9
36	2	9.1	11	50.0
38	4	18.2	15	68.2
39	2	9.1	17	77.3
40	1	4.5	18	81.8
43	1	4.5	19	86.4
47	1	4.5	20	90.9
54	1	4.5	21	95.5
60	1	4.5	22	100.0

Frequency Missing = 2

Tables 4 to 7 present information on the number of

households with children of different ages. About 54% and 62% of all households do not have a boy or girl over fifteen years old, respectively. Also, 62% of all sampled households do not have boys between 8 and 15 years old. The percentage of households without girls between 8 and 15 years is lower at 46%. There seem to be a migratory trend of young boys and girls over eight years old to cities.

Table 4: Number of Boys over Fifteen Years Old per Household in Four Villages in Luribay Valley, Bolivia

No.of Boys	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	13	54.2	13	54.2
1	6	25.0	19	79.2
2	3	12.5	22	91.7
3	2	8.3	24	100.0

Table 5: Number of Girls over Fifteen Years Old per Household in Four Villages in Luribay Valley, Bolivia

No.of Girls	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	15	62.5	15	62.5
1	8	33.3	23	95.8
2	1	4.2	24	100.0

Table 6: Number of Boys between Eight and Fifteen Years Old per Household in Four Villages in Luribay Valley, Bolivia

Nr.of Boys	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	15	62.5	15	62.5
1	4	16.7	19	79.2
2	4	16.7	23	95.8
3	1	4.2	24	100.0

Table 7: Number of Girls between Eight and Fifteen Years Old per Household in Four Villages in Luribay Valley, Bolivia

Nr.of Girls	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	11	45.8	11	45.8
1	6	25.0	17	70.8
2	6	25.0	23	95.8
3	1	4.2	24	100.0

Male farmers in Luribay seem to have more education than females. Table 8 indicates that in 14 households out of 24 (58.3%) male adults have completed at least six years of school (primary school). One male adult has even completed high school (12 years). Female adults at their highest level of education are equivalent to only two-thirds of men's highest level of education. Two female adults were able to finish the eighth grade (9.5%). Only seven adult females (33.3%) have finished primary school, and one adult female did not have any formal education (Table 9).

Table 8: Education Level of Male Adults in Four Villages in Luribay Valley, Bolivia

Grade	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	4.2	1	4.2
2	2	8.3	3	12.5
3	2	8.3	5	20.8
5	5	20.8	10	41.7
6	5	20.8	15	62.5
7	2	8.3	17	70.8
8	3	12.5	20	83.3
9	1	4.2	21	87.5
10	1	4.2	22	91.7
11	1	4.2	23	95.8
12	1	4.2	24	100.0

Table 9: Education Level of Female Adults in Four Villages in Luribay Valley, Bolivia

Grade	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	1	4.8	1	4.8
1	1	4.8	2	9.5
2	2	9.5	4	19.0
3	4	19.0	8	38.1
4	5	23.8	13	61.9
5	1	4.8	14	66.7
6	4	19.0	18	85.7
7	1	4.8	19	90.5
8	2	9.5	21	100.0

Frequency Missing = 3

Regarding access to extension (Table 10), in twenty households (or 83% of all households) only the adult male interacts with extension workers. In three households (or 12%), both male and female adult members have a relation to the extension component of the development projects, and one household appears not to have any connection to extension.

Table 10: Access to Extension of Male and Female in Four Villages in Luribay Valley, Bolivia

Fam. Member	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Nobody	1	4.2	1	4.2
Male Adult	20	83.3	21	87.5
Female Adult	3	12.5	24	100.0

As shown in Tables 11 and 12, in households where the male adult has completed primary school (15 households), all male adults (100%) have access to extension, while no female adult has access to extension. In households where female

adults have completed their primary education, it seems that in 76%, or 13 households out of 17, the male adult is the only one with access to extension. In general, women seem to have a far more limited access to extension compared to men. Another point is that primary schooling seems to be important in using extension services. This may be due to the way projects' extension components are designed or to the approach of extension agents to farmers in the valley.

Table 11: Cross Tabulation Between Education of Male Adults and Who Has Access to Extension/Information in Four Villages in Luribay Valley, Bolivia

(Education of the father)
(Who has access to extension)

Frequency / Row Pct	None	Ad.Male	Ad.Fem.	Total
primary	0	15	0	15
	0.00	100.00	0.00	
secondary	1	5	3	9
	11.11	55.56	33.33	
Total	1	20	3	24

Table 12: Cross Tabulation Between Education of Female Adults and Who Has Access to Extension/Information in Four Villages in Luribay Valley, Bolivia

(Education of the mother)
(Who has access to extension)

Frequency / Row Pct	none	Ad.Male	Ad.Fem.	Total
no educ.	0	1	0	1
	0.00	100.00	0.00	
primary	1	13	3	17
	5.88	76.47	17.65	
secondary	0	3	0	3
	0.00	100.00	0.00	
Total	1	17	3	21

In terms of land, Luribay farmers own very small plots. Results of the sample population in Table 13 show that about 66%, or two out of three farmers own 0.3 hectares or less. Table 14 shows that eight farms, or 33% of all households, own one plot of land; whereas 50%, or twelve farms, have two to three plots of land. The remaining four farms have four or five plots. The pattern of ownership seems to be influenced greatly by marriage between people of different villages and by plots inherited from relatives from other villages. Land ownership is crucial for families in Luribay because of its importance as the fundamental resource for farmers' survival and, also, because of religious and mystical ties between farmers and land. Land ownership and its implications for household members may be important for future research and project planning in Luribay Valley.

Table 13: Land Owned by Families in Four Villages in Luribay Valley, Bolivia

No.of ha.	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0.1	4	16.7	4	16.7
0.2	6	25.0	10	41.7
0.3	6	25.0	16	66.7
0.4	4	16.7	20	83.3
0.5	3	12.5	23	95.8
0.8	1	4.2	24	100.0

Table 14: Number of Plots Among Households in Four Villages in Luribay Valley, Bolivia

No.of Plots	Frequency	Percent	Cumulative Frequency	Cumulative Percent
one	8	33.3	8	33.3
two	6	25.0	14	58.3
three	6	25.0	20	83.3
four	3	12.5	23	95.8
five	1	4.2	24	100.0

The Analysis of Gender in the Study Villages in Luribay

The second part of Chapter 4 examines topics directly related to the objectives of this research. In the study villages of Luribay Valley, both men and women seem to have high levels of complementarity in several crop-related tasks. From Table 15 (p.39) it may be concluded that, according to the respondents' perception, men work longer hours than women in the two major food crops, corn and potatoes. Men work an average of 35.2 days per year in corn and 37.5 days per year in potato production. Women work an average of 23.4 days per year in corn and 24.8 days per year in potato production. For both crops, women work between twelve and thirteen days less than men. Also, land preparation and irrigation for corn and potato seem to be the most time-consuming activities for men, requiring between 9.3 and 10.9 days per year. However, in key activities such as sowing and harvesting, women work an equivalent or greater number of days than men. Moreover, the marketing of both crops seems to be a mainly female task.

This pattern persists on the farmers' newest crop, peas.

The sowing activity for peas is one of the heaviest and most difficult to complete. Both men and women work almost the same number of days per year, 6.7 and 6.5, respectively. Pea plots are located in the river bed which is a hard mixture of sand, gravels, and rocks. Rocks need to be removed before the specific action of putting seed in the soil. The husband and wife remove enough rocks and stones to be able to sow, then he opens the furrow with a manual plow or pick and she deposits the seeds in the furrow. All activities associated with peas require about the same average number of days per year from the adult male and female (28.7 days from the male and 27.3 days from the female).

Regarding grapes, irrigation requires the largest number of days from male adults, on average, 11.5 days per year. On the other hand, the marketing task is again primarily a female responsibility which takes, on average, 7.2 days per year. Altogether for grapes, men seem to work 25.3 days per year versus 20.3 days per year of the women's time. A similar figure presents itself in terms of tree fruit, including peaches, apples, and pears. Activities for these fruits are tied to grape activities; that is, irrigation is carried out at the same time for both crops, grapes and tree fruits. Men spend an average of 16.4 days per year on tree fruit crops, and women 13.7 days.

A very different labor distribution by gender is shown in the last part of Table 15 which is related to animals.

Herding sheep takes an average of 5.4 days of men's time each year, whereas women put in an average of 90.4 days per year. Adult female household members put in nearly twenty times more time herding sheep than do adult males. Furthermore, feeding sheep seems to be an exclusively female task (23.5 days per year of women's time versus none of the men's time). A similar tendency presents the task related to other small animals such as pigs, poultry, and guinea pigs. The wife spends an average of 158.3 days per year in feeding the small animals, compared to an average of 22.8 days per year spent by the husband. In sum, for the tasks related to sheep and other small animals, females spend an average of 273.3 days per year, which is between nine and ten times more than the number of days per year spent by males (29.5 days).

It must be mentioned at this point that there is no systematic record of the number of days used for the different agricultural tasks by household members. This analysis, as mentioned elsewhere, is based on the interviewees' recollection of facts and activities.

Figure 3 (p.41) displays an approximate gender-disaggregated calendar for agricultural and non-agricultural activities for a household in Luribay. The figure shows a concentration of activities for the months of August, September, and October for both male adult and female adult. Various tasks are carried out during those months: pest control and irrigation of corn and potato, involving mainly

Table 15: Activities Analysis of Agricultural Production in Four Villages in Luribay Valley, Bolivia (in days per year).

Activity	Adult Male	Adult Female
Crop production		
*Corn		
-Land Preparation	9.3	3.2
-Sowing	3.5	3.9
-Weeding/Cultivation	3.9	2.9
-Irrigation	10.9	4.9
-Pest/Disease Control	2.7	0.9
-Harvesting	2.2	2.0
-Marketing	2.0	5.2
-Storage	0.7	0.4
TOTAL	35.2	23.4
*Potato:		
-Land Preparation	9.8	3.5
-Sowing	4.3	4.3
-Weeding/Cultivation	3.5	2.5
-Irrigation	10.3	4.9
-Pest/Disease Control	2.9	0.8
-Harvesting	5.2	4.8
-Marketing	1.4	4.0
TOTAL	37.5	24.8
*Peas:		
-Sowing/Fertilization	6.7	6.5
-Irrigation	9.8	6.1
-Weeding/Cultivation	2.2	1.6
-Pest/Disease Control	3.6	1.3
-Harvesting	5.8	5.5
-Marketing	0.6	6.4
TOTAL	28.7	27.3
*Grapes:		
-Irrigation	11.5	4.8
-Diseases Control	4.4	2.6
-Pest Control	1.8	1.3
-Harvesting	3.6	3.1
-Pruning	2.1	1.3
-Marketing	2.0	7.2
TOTAL	25.3	20.3
*Fruit trees:		
-Irrigation	12.1	5.2
-Harvesting	2.7	2.3
-Marketing	1.6	6.2
TOTAL	16.4	13.7
Animals		
*Sheep		
-Herding	5.4	90.4
-Processing	1.0	0.2
-Feeding	0.0	23.5
TOTAL	6.4	114.1
*Small Animals		
-Feeding	22.8	158.3
-Processing	0.3	0.9
TOTAL	23.1	159.2

the husband and boys; harvest and marketing of peas, involving the entire family for the former and mainly the wife and girls for the latter; irrigation in grapes which is mainly a male task; pest/disease control in grapes which is a shared task; and herding and feeding animals which is a female task. Finally, most domestic activities are carried out by women. These include: carrying water, collecting fuelwood, preparing food, cleaning, washing, and taking care of children.

However, August, September, and October are not the busiest months for the Luribay farm families. The harvest of grapes and tree fruits, carried out by all household members, is a tedious and time-consuming activity. Moreover, taking the products to the city markets, which is a female responsibility, needs to be done within a couple of days after each harvest activity. During the peak days from February to April, the family works the entire day in the field. In addition, women have to dedicate extra time for their domestic duties. This points to a double burden for females in the study villages.

Most domestic activities that run throughout the year seem to be carried out by women, with the exception of collecting fuelwood. All temporary tasks may be performed by men such as home repairs/construction, handicrafts (which is basket making for the transportation of grapes), and the cottage industry (which is the making of a grape liquor after the harvest season is over).

Figure 3: Gender-Disaggregated Activities Calendar for Four Villages in Luribay Valley, Bolivia

Activity	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Corn:												
Land Prep.	AM,b,af											
Sowing		AM,AF,b,g										
Weed./Cult.				AM,af								
Irrigation			AM,B									
Pest Control				AM,af,b								
Harvest							AM,AF					
Marketing							AF,G,am					
Potato:												
Land Prep.	AM,b,af											
Sowing/Manure		AM,AF										
Weed./Cult.			AM,af									
irrigation			AM,B									
Pest Control			AM,af									
Harvesting						AM,AF,B,G						
Marketing						AF,G,am						
Peas:												
Sowing/Fert.										AM,AF		
Irrigation												AM,af
Weed./Cult.												AM,af
Pest Control												AM
Harvest		AM,AF,B,G										
Marketing		AF,G,am										
Grapes/Fruits												
Irrigation				AM,B								
Pest/Dis.Ctrl				AM,af								
Pruning		AM,AF										
Harvest								AM,AF,B,G				
Marketing								AF,G				
Sheep/Sm.Anim												
Herding	AF,G											
Feeding	AF,G,b											
Domestic Tsks												
Water Carrng.	AF,G											
FuelWood Col.	AM,B,af											
Food Prep.	AF,G											
Rep./Const.											AM,B	
Cleaning	AF,G											
Clothes Wash.	AF,G											
Child Care	AF,G											
Handicrafts											AM	
Cottage Ind.											AM	
Community											AM	

Legend:

AM=Male Adult's Major Contribution
AF=Female Adult's Major Contribution
B=Boy's Major Contribution
G=Girl's Major Contribution
am=Male Adult's Minor Contribution
af=Female Adult's Minor Contribution
b=Boy's Minor Contribution
g=Girl's Minor Contribution

Table 16 (p.46) presents the sum of all labor days for agricultural tasks in Luribay. The table includes adult males and females, as well as boys and girls over 15 years old. The information displayed in Table 16 corroborates the trend of the above analysis. Averages of men's longest activities seem to be: irrigation, with 42.5 days per year; animal feeding, with 22.8 days per year; harvesting with 19.5 days per year; and land preparation, with 19.1 days per year. Women, on the other hand, work on average the largest number of days feeding animals such as sheep and other animals, with 181.8 days per year; followed by sheep herding, with 90.4 days per year; marketing, with 29.0 days per year; and irrigation, with 20.7 days per year.

A great difference between men's labor use and women's labor use is observable in the feeding task, 22.8 days compared to 181.8 days respectively. Other activities, such as sowing, harvesting, and processing animals, are equally or almost equally shared by adult men and women. Boys and girls contribute to agricultural tasks to a lesser degree. Their largest contribution is related to animal feeding, into which the girls put an average of 71.0 days per year and the boys 38.0 days per year. The girls also contribute to sheep herding, with an average of 53.5 days per year. On the other hand, the boys help with the irrigation duties averaging 11.7 days per year.

Total numbers show that women's average work is 376.7

"days" per year. This actually indicates that women accomplish 376.7 "days' worth" of agricultural activities per year, or more than one activity per day on average. For example, women may feed small animals, herd sheep, and work in the crop field in a single day, in addition to their domestic duties. As discussed above, animals take a large part of the women's time in agricultural activities. Feeding and herding are not heavy activities, nor do they require long hours but they need to be done on a daily basis.

To a lesser degree, men are also involved in these specific tasks, particularly when females are absent fulfilling other duties, such as marketing. Men's total labor in agriculture is 159.8 "days" per year. A similar difference is also noted between boys and girls. The boy works on agriculture an average of 89.0 "days" per year and the girl contributes to agriculture with 146.2 "days" per year.

Figure 4 (p.47) presents two charts displaying the total number of days per year for agricultural activities carried out by men and women in relation to the number of households. The chart at the top shows that the least number of days of activities involving the man is about 40 and occurs in one household. In another household, the male adult performs up to 360 days of activities. In twelve households, which represent the highest frequency, men carry out 120 days of agricultural activities. The chart at the bottom discloses first that in three households, women perform 800 days of agricultural

activities per year. Second, in seven households, which represent the highest frequency, women are involved in 400 days of activities per year. Third, in five households, women seem to have little or no participation in agricultural activities.

Comparing and contrasting both charts, we observe that in households with the largest number of days, the number of days worked by women are far more than men's (800 "days" compared to 360 "days"). We also observe that, in the largest number of households in the bottom chart, women's work is 400 days' worth per year, compared to the 120 days' worth of men shown by the top chart. Finally, women in some households do not appear to participate in any agricultural activity. However, when women do participate, they do so in large proportions.

We should keep in mind that measuring the time use and the allocation of labor is difficult and time consuming. Furthermore, the information given by the interviewees is based on their recall of events which may decrease the accuracy of the information. However, the trend identified in this analysis seems to be sufficiently strong to allow some lack of preciseness.

The household activities shown in Figure 3 run over the whole year, with the exception of repairs/constructions, handicrafts, and cottage industry. Figure 3 also indicates that household-related activities are primarily female responsibilities. In this regard, Table 17 (p.46) presents

data on the distribution of household responsibilities between males and females. The numbers tell us about the percentage of households where males or females may or may not be responsible for a particular activity. The information presented in Table 12 is again based on mostly male informants. The table may, therefore, reflect the male's appreciation of the distribution of responsibilities among household members.

In six out of nine activities, the majority of households give the responsibility to adult women. Further, key tasks such as water carrying, food preparation, house cleaning and washing clothes are female responsibilities in nearly nine out of ten households (83% to 88% of all households). For temporary tasks, such as house repairs/construction, handicrafts and cottage industry, only a few households, 8%, 4%, and 8% respectively, expect that adult women take responsibility. The table presents a more even distribution in relation to male adult responsibilities. In only one continuous activity, fuelwood collection, is there a tendency of households to give male adults this responsibility (79%). The responsibility least frequently assigned to male adults concerns child care, where only 4%, or one household expects him to carry out this task. The second least frequent responsibility for male adults is food preparation. Only 8% of the households, two out of twenty-four, expect him to cook.

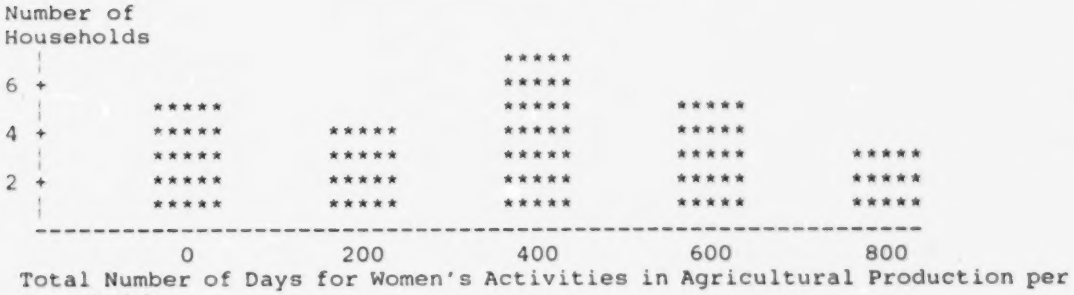
Table 16: Labor Use by Age-Sex Categories for Agricultural Tasks in Four Villages in Luribay Valley, Bolivia (in days per year).

Activity	Adult Male	Adult Female	Boy ov.15	Girl ov.15
Land Preparation	19.1	6.7	7.6	2.8
Sowing	14.5	14.7	8.6	5.5
Weeding/Cultivation	9.6	7.0	4.3	2.5
Irrigation	42.5	20.7	11.7	0.5
Pest/Disease Control	15.4	6.9	3.4	0.3
Harvesting	19.5	17.7	8.4	4.8
Marketing	7.6	29.0	2.3	5.4
Pruning	2.1	1.3	0.5	0.0
Herding	5.4	90.4	4.2	53.5
Feeding Animals	22.8	181.8	38.0	71.0
Processing Animals	1.3	1.1	0.0	0.0
TOTAL	159.8	376.7	89.0	146.2

Table 17: Responsibility by Age-Sex Categories for Non-Agricultural Activities in Percentage of Households in Four Villages in Luribay valley, Bolivia.

Activity	Ad. Male		Ad.Female		Boy ov.15		Girl ov.15	
	No	Yes	No	Yes	No	Yes	No	Yes
Carrying Water	63	36	17	83	79	21	58	42
Fuel Wood Collection	21	79	42	58	54	46	83	16
Food Preparation	92	8	12	88	96	4	71	29
Repairs/Construction	12	88	92	8	54	46	100	0
House Cleaning	79	21	17	83	92	8	71	29
Clothes Washing	71	29	12	88	96	4	67	33
Children Care	96	4	42	58	92	8	71	29
Handicrafts (baskets)	54	46	96	4	96	4	96	4
Cottage Industry (Liquor)	88	12	92	8	88	12	100	0
Community	4	96	92	8	79	21	96	4

Figure 4: Total Number of Days for Activities Performed by Male and Female Adults for Agricultural Production in Four Villages in Luribay Valley, Bolivia



Well over fifty percent of all households seem not to give great responsibilities to boys and girls. However, girls help carrying water in more households than boys (42% of all households for girls and 21% for boys). On the other hand, 46% of all households expect boys to take some responsibility for the collection of fuelwood, whereas only 16% of all households expect girls to take the same responsibility. For food preparation and house cleaning, girls take responsibility in 29% of all households. Boys, on the other hand, are expected to take responsibility for the same tasks in only 4% and 8% of all households, respectively. Finally, no household expects girls to take responsibility for duties such as house repairs/construction and making grape liquor (cottage industry).

The authority to make decisions seems to vary for males and females in the villages of Collpani, Cachualla, Callaviri and Catavi. The kind of task, and its relation to agricultural production or to the domestic domain, seems to have an impact on who makes what decisions. Three categories are shown in Table 18 (p.53): low or no decision-making authority, medium or shared decision-making authority and high or total decision-making authority. Women seem to have more frequent high/total authority to make decisions in all three activities related to domestic work. Women are the major decision makers in 58% of all households regarding food expenditures, 54% of households regarding clothing

expenditures, and 42% of households concerning school expenditures.

However, in other important tasks related to agricultural production, women seem not to play a major role in terms of decision-making. On the use of family labor, for instance, no household named the female adult as having authority for major decisions. Moreover, in 71% of all households, the woman has low/no decision-making authority for the use of family labor. In 50% of all households, men seem to be the major decision-makers regarding the use of family labor, but in 21% of all households, men do not play a decisive role in the decision-making.

Regarding income control, in 79% of all households, the husband appears to have a low/no decision-making authority. The same thing seems to occur in 71% of all households for the wife. However, in 17% of all households, women have high/total authority to decide versus only 8% of all households where men are the major decision makers. These numbers may tell us that in many households income is a rarely available resource, and therefore for only a few families is income control an important issue.

Despite some considerable gender differences in decision-making such as "Family Labor Use", where male adults have a greater authority than female adults, there is a tendency, for most activities and in most households, to share the decision-making authority between both sexes. The most dramatic

examples are "Harvest Use", where in 88% of all households the authority is medium/shared for males and in 83% of all households the authority is medium/shared for females. Also, "Marketing" is a task where a medium/shared authority is enjoyed by males in 83% of all households and by females in 79% of all households. This tendency may be a signal that consultation and a shared decision-making process take place within households in the study villages. Furthermore, this pattern may be more significant, since the majority of the respondents were male. Adult males of the observed Luribay villages may be somewhat aware of women's role in the decision-making process.

The decision-making analysis may be better understood after looking at access to resources. Access to resources is defined as the ability or permission to use them based on the usage need. Factors such as the number and the quality of resources, the generation of resources, and when it occurs may have a considerable impact on the decision-making mechanism within households. In the villages of Collpani, Cachualla, Catavi and Callaviri, resources come mainly from the domestic production of goods. Table 19 (p.53) shows the different percentages of households related to three levels of access to resources: low or no access, medium access, and high or total access. The information in the table refers basically to the access to resources, instead of both access and control. The reason is that access to, and control over, resources were

difficult to separate and confusing for interviewees.

Land may be the most crucial resource for farmers in Luribay. Table 19 indicates that in 96% of all households, that is, in 23 out of 24, female adults seem to have low/no access to land, and only in one household does the woman have medium access to land. This household may be the one where there is no male adult, and, even in this household, the woman seems to have only partial access to land. On the other hand, the percentage of households where adult males have high/total access to land is 50. However, in 46% of all households, the man has low/no access to land.

Women seem to have more frequent access to two resources in the study villages. They appear to have high/total access to the resource animals in at least 50% of all households and medium access in 21% of all households. They also seem to have high/total access to the resource cash in 71% of all households. In total, women may have medium or high/total access to cash in 88% of all households, or in 21 households out of 24. Cash is an important resource for the family. One reason why women have such a high access to the resource cash may be that they seem to be the primary marketers and consequently the cash managers. Another reason may be that households use a significant portion of their earnings for the purchase of food. Women are in charge of the food preparation; consequently, they are probably responsible for its purchase.

For both resources, animals and cash, men appear to have less frequent access. In both cases, the percentage of households where men have low/no access is 71. Adding the medium access frequency, in 96% of all households, men seem to have medium or low/no access to animals, and in 88% of all households, men appear to have medium or low/no access to cash.

Although the table indicates 67% of households with low/no access to the market for women, that figure is better than the 71% of households with low/no access to the market for men. Again, these figures are mostly men's responses and may differ from women's appreciations.

Access to information should be given major attention in gender analysis. In the four villages, it seems that adult males have far more frequent access to information, especially through extension. In 54% of all households, men seem to have high/total access to information versus no households where women have the same access. Further, in 4% of all households, possibly the only one without male adults, the woman seems to have only a partial access to information.

In general, access to resources, shown in Table 19, is highly limited for women. Women do not seem to have high/total access to seven resources (58% of the counted resources) in any household, including two key resources: land and information. Moreover, they seem to have medium access to all resources in only a few number of households, nine

Table 18: Percentage of Households with three Levels of Decision-Making Force in Relation to Agriculture and Household for Males and Females in Four Villages in Luribay Valley, Bolivia.

Decision-Making on:	Adult Male			Adult Female		
	Low/ None	Medium/ Shared	High/ Total	Low/ None	Medium/ Shared	High/ Total
Family Labor Use	21	29	50	71	29	0
Hired Labor	8	46	46	52	42	4
Exchangeable Labor	8	71	21	29	67	4
Purchase of Inputs	9	58	33	42	54	4
Crops Selection	4	79	17	21	75	4
Harvest Use	4	88	8	13	83	4
Marketing	4	83	13	17	79	4
Income Control	79	13	8	71	12	17
Food Expenditures	58	21	21	21	21	58
Clothing Expenditures	67	21	12	25	21	54
School Expenditures	67	25	8	33	25	42

Table 19: Percentage of Households with three Levels of Access to Resources for Males and Females in Four Villages in Luribay Valley, Bolivia.

Resource	Adult Male			Adult Female		
	Low or None	Medium	High or Total	Low or None	Medium	High or Total
Land	46	4	50	96	4	0
Seeds	17	25	58	67	21	12
Tools	8	8	84	96	4	0
External Inputs	71	17	12	83	16	0
Farm Inputs	92	8	0	100	0	0
Animals	71	25	4	29	12	50
Family Labor	37	38	25	62	38	0
Hired Labor	12	13	75	83	13	4
Exchangeable Work	21	17	62	83	17	0
Market	67	21	12	71	21	8
Cash	71	17	12	12	17	71
Information	38	8	54	96	4	0

households out of 24, or 38% of the total. The level of low/no access seems to be even more frequent. Women have a low/no access level in 62% to 96% of all households with the exception of cash and animals.

In this chapter, the most relevant facts of tables and figures have been discussed. After reporting demographic information on family composition, education levels, access to extension and land ownership, this chapter deals with the interpretation of data related to the activities analysis, gender disaggregated activities calendar, household responsibilities, decision-making within the household and access to resources.

CHAPTER 5
DISCUSSION AND CONCLUSIONS

The most relevant outcomes of gender analysis in four villages in Luribay Valley, Bolivia have been presented and analyzed. This study also gave basic demographic information on age, education, access to extension/information, and land ownership. In this chapter, I will draw conclusions based on the hypothesis and the objectives of this research.

The hypothesis stated that household members in farming systems in Luribay Valley (a) have different tasks, (b) have unequal responsibilities, (c) enjoy different degrees of access to resources, and (d) posses unequal decision-making authority. The research objectives relate to the identification and documentation of productive and reproductive roles of male and female household members. Also, the research objectives are associated to the identification and documentation of the decision-making process within households and the access to resources of household members.

The first conclusion is the acceptance of the hypothesis of this research. My second conclusion is that this study has identified (a) the productive roles in agriculture of household members, (b) the domestic activities of family

members, (c) the decision-making process within the household, and (d) the degree of access to resources of household members.

Third, I claim that in Luribay Valley, complementarity seems to be practiced in almost all activities concerning growing crops. Male and female farmers tend to have specific assignments within a shared task, such as in the sowing task where the man opens the furrows and the woman puts the seed in it. However, the figure looks different concerning domestic chores and animals. Female adults and girls seem to be in charge of the vast majority of domestic tasks and also seem to spend much of their time taking care of animals.

Fourth, although this research has presented information on the distribution of labor based on gender and age, it does not deal with the intensity, the monotony, the danger, and the relative importance of tasks among farms in the Luribay villages. For instance, male adults, as family heads, do not allow their children or wives to spray pesticides. When asked why children and women are not supposed to carry out that assignment, men answered that spraying may be hazardous for their health. Still, women and children seem to help by carrying water, which also is a heavy and demanding job. An example of intense work is the task of sowing and fertilizing peas. As explained elsewhere, both the husband and wife spend long days removing rocks from the river bed, opening furrows and planting seeds.

Concerning the value of tasks in Luribay, a question is raised at this point: What is the relative importance and the economic value of tasks performed by household members? Marketing, a female domain, is of great economic significance for the family survival. However, domestic chores and taking care of animals tend to be seen by the respondents as secondary functions rather than principal ones. We see that women are critical players in important tasks, and they also perform other, for some, "less important" tasks.

Fifth, we realize differences in the decision-making process within the household in Luribay Valley, but we also observe a tendency to share decisions among male and female adults. Female adults seem to have a certain degree of authority in making decisions in some fields. Their authority may increase or decrease, depending on the kind of task and probably on its importance. The domestic area seems to be most dependent on women's decisions. Also, in the agricultural area, women seem to have some influence on the decision-making process. Nevertheless, their authority may be weaker than in the domestic domain.

Finally, the gap seems to be larger concerning the access to resources. Women have nearly no access to key resources such as land and information. Land ownership in several Andean regions may be an exclusively male business, and Luribay seems to be one of those regions. Moreover, as discussed before, access to information/extension also seems

to be a male-only activity. In this regard, development projects and extension components must put great emphasis on giving women access to land and knowledge to improve women's situations. Becoming informed and aware will help women to achieve self-reliance and to be better prepared in facing the challenges in their households and in society.

We also found that there is a deep inequality between men and women in their access to extension/information. This fact must be seriously considered by development projects and extension services in Luribay. The question to mind is why so few women have little or no access to extension/information? Some reasons may be: an all-male extension and projects personnel, male-biased approaches to farmers, lack of awareness of the role of women in agricultural and household production, and women's lack of education. Finding what the causes for this gap are and conducting efforts to bridge them is critical for helping women to improve their situation.

Based on the data analysis, I claim that male and female household members show differences concerning agricultural activities and even greater differences concerning household activities. I also claim that male and female household members have an unequal number of responsibilities, an unequal decision-making force, and highly unequal access to resources.

I believe that development projects in Luribay Valley will substantially increase their impact if they take the women's situation into consideration; that is, to understand

what the role of women is and what their hierarchical situation is within the household and in the community. Gender analysis can contribute to make projects' decision-makers and staff more aware of the women's situation in Luribay. Further, gender analysis should reflect a new way of approaching development in Luribay and a change in attitudes and behaviors among people involved in the development of the valley. All this can be achieved by organizing seminars and training workshops on gender issues for projects' personnel, hiring female extension personnel and administrative officials, and giving female farmers access to education.

The dimension of gender analysis and gender awareness can and should cross institutional borders and reach villagers. Male farmers may also have to change some attitudes and behaviors.

Gender Analysis can help implement a more participatory development approach. A specific measure that I suggest is that projects allow household members, and women in particular, participation in all project phases. Women have to have a high degree of participation not only as receptors, but also as active contributors and decision makers. Also, women should be able to obtain access to resources provided by projects, such as seeds and fertilizers. This may be a precedent and an example to be followed within households in Luribay.

Farms in Luribay are systems of production and

reproduction in which crops, animals, and people are closely interrelated. Women and other household members are integral parts of the system. Furthermore, the household seems to be fundamental for the survival of its members and the target of their production and reproduction strategies. Therefore, women, men, and children must be seen as integral parts of that system and not as isolated individuals. Gender analysis in Luribay may disagreggate and deconstruct the household, but gender analysis does not suggest considering household members as unconnected individuals regarding each other or the farming system. For instance, the time use among household members is not a series of single tasks carried out by one or another household member, but a number of inter-connected activities within the production and reproduction system.

My final point is that some activities may have a more holistic and ceremonial character than others. Some may have a symbolic and mystical significance where men and women play different roles. Gender analysis may shed light on some aspects of the livelihood systems in Luribay, but gender analysis can not and should not be the only tool used in planning and implementing development projects for the Luribay Valley.

Appendix

ENCUESTA A FAMILIAS CAMPESINAS EN LURIBAY

Entrevista Nr. _____ Fecha _____
Comunidad _____

I INFORMACION GENERAL

1. ¿Cuantos son los miembros de esta familia? _____

2. ¿Qué edad tiene el padre? _____
   la madre? _____

3. ¿Cuantos son los hijos mayores de 15 años? Varones _____
   Mujeres _____

4. ¿Cuantos son los hijos entre 8 y 15 años? Varones _____
   Mujeres _____

5. ¿Cuantos son los hijos menores de 8 años? Varones _____
   Mujeres _____

6. ¿Qué nivel de educación tiene el padre? _____
   la madre? _____
   hijo varón? _____
   hijo varón? _____
   hijo varón? _____
   hija mujer? _____
   hija mujer? _____
   hija mujer? _____

7. ¿Todos en la familia están saludables? _____Si _____No
   En caso de respuesta negativa, quien(es) están enfermos?
   _____
   _____

8. ¿En caso de enfermedad o accidente, donde buscan ayuda?
   _____Hospital del pueblo
   _____Posta médica
   _____Curanderos
   _____Otros (especifique)

9. ¿Con que medicinas cura a sus enfermos? _____pastillas,etc.
   _____hierbas

10. ¿Cuales miembros de la familia tienen acceso a los servicios de extensión?
    _____
    _____

II PRODUCCION AGRICOLA

11. ¿Cuantas hectareas tiene la familia? _____ha.

12. ¿Como está distribuida la tierra? _____Un pedazo
    _____Dos o más(especifique)

13. Tiene alguna parcela dada en alquiler? _____Si (cuantas?)
    _____ No

14. Tiene alguna parcela tomada en alquiler? _____Si (cuantas?)
    _____ No

Survey on Peasant Families in Luribay

Interview Nr. _____ Date_____

Community_____

I GENERAL INFORMATION

1. How many members are in the family? _____

2. What is the age of the father? _____
   the mother? _____

3. How many children are older than 15? Male_____
   Female_____

4. How many children are between 8 and 15 years? Male_____
   Female_____

5. How many children are under 8 years? Male_____
   Female_____

6. What is the education level of the father? _____
   the mother? _____
   boy 1 _____
   boy 2 _____
   boy 3 _____
   Girl 1 _____
   Girl 2 _____
   Girl 3 _____

7. Do all family members are healthy? _____yes _____no
   In case of a negative answer, who is (are) sick?
   _____ _____ _____

8. In case of illness or accident, where do you look for help?
   _____Medical center in main town
   _____Health station
   _____Medicine men
   _____Other (specify)

9. What medicines do you use for the sick? _____Tablets, etc.
   _____Herbs

10. What family members have access to extension services?
    _____ _____ _____

II AGRICULTURAL PRODUCTION

11. How many hectare has the family? _____ha.

12. How is the land distributed? _____one piece
    _____two or more (specify)

13. Do you have any plot given on lease? _____yes (how many?)
    _____no

14. Do you have any plot taken on lease? _____yes (how many?)
    _____no

Tabla 1:Actividades agrícolas de los miembros de la familia en jornales

	Jefe fam.	Esposa	Varón ad	Mujer ad.	Niños	Niñas	mes
maíz:							
Prep.terreno							
Siembra							
Aporque/deshierbe							
Riego							
Ctrl.plagas							
Cosecha							
Mercadeo							
Almacen.							
Papa:							
Prep.terreno							
Siembra							
Aporque/Deshierbe							
Riego							
Ctrl.plagas							
Cosecha							
Mercadeo							
Arverjas:							
Siembra/Fertiliz.							
Aporque/Deshierbe							
Riego							
Ctrl.plagas							
Cosecha							
Mercadeo							
Uvas:							
Riego							
Ctrl.hongos							
Ctrl.Plagas							
Poda							
Cosecha							
Mercadeo							
Otras frutas:							
Riego							
Cosecha							
Mercadeo							
Ovejas:							
Pasteo							
Aliment.							
Procesam.							
Anim.menores:							
Aliment.							
Procesam.							

Table 1:Agricultural Activities of household Members in days

	Fam.Hea	Spouse	Old.Boy	Old.Girl	Yng.Boy	Yng.Girl	Month
Corn:							
Land Prep.							
Sowing							
Weed./Cul.							
Irrigat.							
Pest Ctrl.							
Harvest							
Marketing							
Storaging							
Potatoes:							
Land Prep.							
Sowing							
Weed./Cul.							
Irrigat.							
Pest Ctr.							
Harvest							
Marketing							
Peas:							
Sowng/Fer.							
Weed./Cul.							
Irrigat.							
Pest Ctr.							
Harvest							
Marketing							
Grapes:							
Irrigat.							
Fungi Ctr.							
Pest Ctr.							
Pruning							
Harvest							
Marketing							
Tree Frts.							
Irrigat.							
Harvest							
Marketing							
Sheep:							
Herding							
Feeding							
Processing							
Sm.Anim.:							
Feeding							
Processing							

Tabla 2: La toma de decisiones de los miembros de la familia en % (0-25-50-75-100)

Agricultura:	Jefe fam.	Esposa	Varón ad.	Mujer ad.	Niños	Niñas
Uso del trabajo fam.						
Jornaleros						
Trabajo interc.						
Compra de insumos						
Elección de cultivos						
Uso de cosechas/residuos						
Mercadeo						
Actividades remmuneradas:						
Elección de la actividad						
Venta de productos						
Control sobre ingresos						
Hogar y reproducción:						
Gastos en alimentos						
G. en vestidos						
G. en mejoras al hogar						
G. para escuela						
G. en medicinas						

Tabla 3:Acceso a recursos de los miembros de la familia en % (0-25-50-75-100)

	Hombre	Mujer	Hijo May.	Hija May.
Tierra				
Semillas				
Herramientas				
Insumos adquiridos				
Insumos propios				
animales				
Trabajo familiar				
Jornaleros				
Trbjo.intercamb.				
Mercado				
Dinero				
Informacion				

Tabla 4:Responsabilidades hogareñas y no-hogareñas de los miembros de la familia

	Hombre	Mujer	Hijo May	Hija May	Niños	Niñas	época
Recol.agua							
Recol.leña							
Prep.alim.							
Repar/Const.							
Limpieza							
Lavado ropa							
Cuido menor							
Artes man.							
Indust.hog.							
Comunidad							

Table 2: Decision-Making among Family Members in % (0-25-50-75-100)

	Fam.Hea	Spouse	Old.Boy	Old.girl	Yng.Boy	Yng.Girl
Agriculture:						
Use of Fam.wor						
Hired Labor						
Exchg.Labor						
Inputs Purch.						
Crops choosing						
Harvest Use						
Marketing						
Income Generat.						
Activity Choose						
Sell of Products						
Income Ctrl.						
Household:						
Food Expenses						
Clothes Expens.						
Home Imprvm.e						
School Expens.						
Medicine Expen						

Table 3:Access to Resources by Household Members in % (0-25-50-75-100)

	Fam.Hea	Spouse	Old.Boy	Old.Girl
Land				
Seeds				
Tools				
Purch.Ipts.				
Farm Inputs				
Animals				
Fam.Labor				
Hired Lbr.				
Exch.Labor				
Market				
Cash				
Information				

Table 4:Responsibility in Domestic Activities in % (0-25-50-75-100)

	Fam.Hea	Spouse	Old.Boy	Old.Girl	Boys	Girls	Season
Water Carrng.							
Fuelwood Col.							
Food Prep.							
Repairs/Const.							
Cleaning							
Clothes Wshng.							
Child Care							
Handicrafts							
Cottage Ind.							
Community							

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